



# Australian Bureau of Statistics

## 1350.0 - Australian Economic Indicators, Jan 2003

ARCHIVED ISSUE Released at 11:30 AM (CANBERRA TIME) 10/01/2003

### Feature Article - Impact of the Drought on Australian Production in 2002-03

This article was published in **Australian National Accounts: National Income, Expenditure and Product** (Cat. No. 5206.0), September Quarter 2002

#### INTRODUCTION

Australia is currently experiencing a severe drought, resulting in a range of social and economic impacts. The purpose of this feature article is to briefly describe the likely impact of the drought on the estimates published in the Australian System of National Accounts (ASNA). Both the direct and indirect effects of the drought on GDP are discussed. In addition, the article identifies those components of GDP that are likely to be most affected.

Based on the latest forecasts from the Australian Bureau of Agriculture and Resource Economics (ABARE), the direct effect of the current drought on agricultural production is projected to have a downward impact on GDP growth of 0.6 percentage points between 2001-02 and 2002-03.

In addition to the direct effect there will be various indirect effects. These can be put into two categories. The first category is the effect on downstream industries, principally transport, wholesale trade and the manufacturing of products from agricultural outputs. The second category comprises the multiplier effects arising from the reduced value of production by the agriculture industry and its downstream industries. This has two elements. One arises from any reduction in the inputs of these industries which leads to a reduction in the production of other Australian industries. The other arises from any reduction in factor income of the agriculture and downstream industries that leads to a fall in final expenditures by farmers and others who draw an income from these industries.

In this article no attempt is made to quantify the magnitude of the indirect effects, although consideration is given as to how this might be done. Assessments of the likely impacts of the drought on the economy have recently been released by ABARE, the Commonwealth Treasury and the Reserve Bank of Australia (RBA).

#### DIRECT EFFECT OF THE DROUGHT ON AGRICULTURAL PRODUCTION

ABS estimates of agricultural production and costs in respect of 2002-03 are primarily based on forecasts compiled by ABARE.

The following table shows, in seasonally adjusted chain volume terms, the published data for the March, June and September quarters 2002 and forecasts for the remaining three quarters of 2002-03. The table shows a much more marked decline in agricultural outputs than in agricultural inputs. The difference between the outputs and inputs is gross agricultural product at market prices. The expected fall in the estimates of gross agricultural product at market prices between

2001-02 and 2002-03 represents the direct impact on GDP of the current drought over this period. It is expected to decline in chain volume terms from \$22,583 million in 2001-02 to \$18,128 million in 2002-03, a fall of \$4,455 million or 19.7%. If this eventuates it will make a negative contribution of 0.6 percentage points to the growth in the volume of GDP between 2001-02 and 2002-03.

In the Australian system of national accounts, industry estimates of value added are presented at basic prices, in accordance with international standards. Such estimates give a better indication of an industry's actual value added as they exclude the taxes less subsidies on the products produced by an industry. It is projected that gross value added at basic prices for the agriculture industry will decline from \$21,131 million in 2001-02 to \$16,963 million in 2002-03, a fall of \$4,168 million or 19.7%.

**Please Note:** The estimates of the impact of the drought on agricultural production in 2002-03 appearing in this feature article were based on forecasts made by the Australian Bureau of Agricultural and Resource Economics (ABARE) in Australian Crop Report of 29 October 2002. These forecasts were revised in a further issue of the Report released on 2 December 2002, sometime after the feature article was prepared. **For updated forecasts please see attached addendum.**

#### AGRICULTURAL PRODUCTION, Chain volume measures (a) - Seasonally adjusted

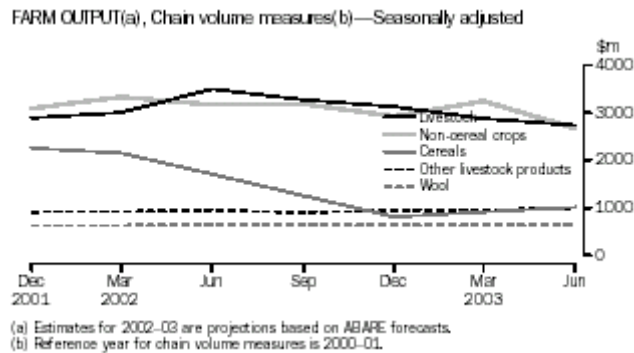
	2001-02				2002-03	
	Mar \$m	Jun \$m	Sep \$m	Dec (b) \$m	Mar (b) \$m	Jun (b) \$m
Outputs	9,959	9,869	9,151	8,368	8,525	7,996
less inputs	4,119	4,058	4,051	3,952	4,009	3,900
Gross farm product at market prices	5,840	5,811	5,100	4,416	4,516	4,096
less taxes less subsidies on products	375	373	327	284	290	264
Agriculture industry gross value added at basic prices	5,465	5,438	4,773	4,132	4,226	3,832
Gross domestic product	174,689	176,106	177,630	na	na	na

na not available.

(a) Reference year for chain volume measures is 2000-01.

(b) Projections based on ABARE forecasts

The graph below, in seasonally adjusted chain volume terms, shows the projected outputs for five major categories of agricultural output. Most of these data are based on ABARE forecasts. It is clear that the major expected impact of the drought in 2002-03 is on the output of cereals.



For a complete picture of the impact of the drought on GDP the indirect effects of the drought must also be considered.

## INDIRECT IMPACTS

The relationships between direct and indirect impacts of the drought on the national accounts are quite complex. For instance, the reduced volume of grain produced means that less road and rail freight will be required to move the crops from the point of production to the various final users. Further, the volume of throughput for the wholesale industry will be reduced, resulting in reduced volumes of production by this industry. However, these negative impacts on the transport and wholesale trade industries could be offset somewhat by the likely increase in activity required to transport stock to market as well as the possible extra transport activity associated with transporting feed for stock and stock for agistment.

The need of some farmers to divest themselves of all but the core stock of animals causes increased manufacturing activity, in the form of slaughtering, in the short term. In the medium to longer term this will result in a reduction in the quantity of stock available for slaughter and thus a probable reduction in this type of activity in future periods.

While very difficult to measure, it is thought that, on balance, the secondary impact of the current drought on downstream industries, principally the transport, manufacturing and wholesale trade industries, is likely to be relatively small.

Another secondary impact of the drought is the effect on the production of other industries due to a reduction in farm inputs. As the table above shows, farm inputs are projected to fall much less significantly than farm outputs. For this reason, this impact is likely to be relatively insignificant for the economy as a whole.

The projected fall in farm income will be determined by a combination of changes in the volume of outputs and inputs, and the changes in output and input prices. While it is certain that there will be a fall in the volume of some outputs, such as cereals, there is some uncertainty about what will happen to prices.

There are other indirect effects of the drought. These may broadly be characterised as 'tertiary effects'. Tertiary effects denote the ensuing effects from the reduced value of production of the agriculture and downstream industries. It follows that if the secondary effect on downstream industries is small then the tertiary effect arising from any reduction in their production must be small too. That leaves the tertiary effect arising from a reduction in final expenditures by farmers, and the like, who suffer a reduction in income as a result of a fall in the value of farm production. The impact on farmers' expenditures from the fall in farmers' income may be mitigated to some degree because farmers can draw down savings from the previous run of good years.

Nevertheless, the decline in farm income is highly likely to have some impact on farmer's expenditures on final consumption goods and services and gross fixed capital formation, although the extent is unknown.

A reduction in expenditures as result of reduced production by agriculture and its downstream industries will, to the extent that such expenditures are on goods and services produced in Australia, lead to a further reduction in Australian incomes. This will in turn lead to a further reduction in expenditures and so on. In this way the so-called multiplier effect magnifies the effect of good or bad farm seasons.

In order to estimate the indirect impacts, Input-Output valued added multipliers can be used. These multipliers provide various measures of change that result from an initial exogenous change to final output. They are calculated based on the industrial structures published in the Input-Output tables (Input-Output Tables (cat.no.5209.0)). Care needs to be exercised in using these multipliers because they reflect average relationships. To the extent that changes at the margin are different from those on average the results can be misleading. Further, as this approach does not capture the effects of change in structure over time that may result from these initial changes, they represent a static rather than a dynamic view of the economy.

Notwithstanding the caveats in the preceding paragraph, the Input-Output multipliers remain a potentially useful means of generating an assessment of the overall impact of the type of shock caused by an event such as the current drought. The calculation of the tertiary effect can be derived by applying the appropriate multiplier to each posited initial impact on expenditures. An analysis of this type is described in a feature article appearing in the September quarter 1996 issue of this publication, titled 'Impact of the 1995-96 farm season on Australian production'.

## **BROAD IMPACT ON MAJOR NATIONAL ACCOUNTING AGGREGATES**

Reduced levels of agricultural production are likely to be reflected in a number of national accounting aggregates. Production, expenditure and income-based estimates will all be affected. For the production and income-based estimates, the most obvious impacts will be seen in the level of gross value of agricultural production and the flow on impact on agricultural income—that is, the proceeds of sales net of operating costs. The downward impact of the drought on agricultural production, while offset somewhat by reduced farm costs, will result in a reduction in the value added and gross mixed income/gross operating surplus of the agriculture industry. Typically, fluctuations in agricultural incomes tend to be of a much greater magnitude than the fluctuations in agricultural production. According to ABARE forecasts, this pattern will continue into the near future, with farm incomes expected to be very substantially lower in 2002-03 than in 2001-02.

The drought will cause several notable direct impacts on expenditure-based estimates in the national accounts. Since the majority (around two thirds) of farm production is exported either directly or indirectly, there will be a significant impact on exports of agricultural commodities, particularly cereals. Estimates of gross fixed capital formation of livestock will also be reduced. There are likely to be falls in seasonally adjusted farm inventories due to lower output and as farmers are forced to run down their stocks of fodder. In addition, wholesalers' inventories of agricultural outputs are likely to decline in seasonally adjusted terms.

---

This page last updated 8 December 2006

© Commonwealth of Australia

All data and other material produced by the Australian Bureau of Statistics (ABS) constitutes Commonwealth copyright administered by the ABS. The ABS reserves the right to set out the terms and conditions for the use of such material. Unless otherwise noted, all material on this website – except the ABS

logo, the Commonwealth Coat of Arms, and any material protected by a trade mark – is licensed under a Creative Commons Attribution 2.5 Australia licence